Mohammad Sadra **Heydari**

MRes student in Economics @ Adam Smith Business School (University of Glasgow)

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Education

MRes in Economics Sep 2023 – Aug 2025 (Expected)
University of Glasgow — Adam Smith Business School *CGPA: 19.4/22*
1st year Research Project: *Publication as a Signaling Strategy in Endogenous R&D Network Formation.*

B.Sc. in Computer Engineering (Minor in Economics) Sep 2018 – Jun 2023
Sharif University of Technology — Department of Computer Engineering *GPA: 17.02/20.0*

Research Interests

- Social & Economic Networks
- Game in Networks
- Econometrics
- Applied Game Theory
- Industrial Organization
- Causal Machine Learning

Research Experience

Knowledge Disclosure and Endogenous R&D Network Formation Mar 2024 - Present
Supervisors: Dr. *Zafer Kanik* and Dr. *Santiago Montoya-Blandón*.

- Conducted a comprehensive literature review to identify key incentives driving firms to publish research and scientific findings, focusing on the signaling incentive's role in the formation of R&D collaborations.
- Developed a novel model of endogenous R&D network formation, incorporating firms with varying productivity levels.
- Utilized simulations to reveal how productivity gaps among firms influence the stability of R&D network structures.
- Demonstrated that large productivity gaps lead to stability of Positive Assortative networks, while smaller gaps favor the stability of Complete network structures.

Ariel Imagery in Neighborhood Socio-economic Stratification Sep 2024 - Present
Supervisor: Dr. *Santiago Montoya-Blandón*.

- Utilizing existing models to score development using satellite imagery to use them in the context of Colombian cities.
- Assessing the quality of the Neighbourhood Stratification done by the government, and evaluating the extent to which geographical stratification represents socio-economic ranking and clustering utilized by Colombian policy-makers.

Mobility and Household Income Dynamics in Iran May 2021 - Dec 2022
Supervisor: Dr. *Naser Amanzadeh*.

- Utilized Absolute Intra-generational Income Mobility (AIIM) as an additional measure to traditional indices, providing a clearer view of economic conditions by highlighting income dynamics among households.
- Made use of copula modeling techniques with cross-sectional income data to estimate AIIM in Iran, enabling accurate mobility analysis despite the absence of long-term panel data.
- Estimated AIIM for urban households in Iran from 2011 to 2019 using cross-sectional data, and extended these estimates backward to 1991 by leveraging copula distributions and models.
- Found that AIIM in urban Iran fluctuated between 40% and 62%, with higher mobility rates among lower-income families.

Publications

Absolute Intragenerational Income Mobility in Iran (2023) [Link]
Amanzadeh, N. and Heydari, M.S. The Quarterly Review of Economics and Finance.

Honors and Awards

2023 **Economics Scholarship (2+3)** *Adam Smith Business School; University of Glasgow* Glasgow, UK
2021 **Best Paper** *Fourth Iran Economic Forum; Tehran Institute for Advanced Studies (TeIAS)* Tehran, Iran
2018 **Silver Medal** *12th International Olympiad on Astronomy and Astrophysics (IOAA)* Beijing, China
2017 **Gold Medal** *13th National Astronomy and Astrophysics Olympiad* Tehran, Iran

Selected Courses

Adam Smith Business School (University of Glasgow)

Econometrics I	(*18/22*)	Mathematical Methods	(*20/22*)	Macroeconomics of Inequality	(*TBD*)
Econometrics II	(*22/22*)	1st Year Research Project	(*TBD*)	Bayesian Data Analysis	(*TBD*)
Macroeconomics	(*20/22*)	Topics in Applied Microeconomics		Industrial Organization	(*TBD*)
Microeconomics	(*18/22*)	(Behavioural Economics)	(*TBD*)	Computational Macroeconomics	(*TBD*)

Sharif University of Technology

Econometrics	(*19.6/20*)	Industrial Organization	(*17.3/20*)	Linear Algebra	(*16.7/20*)
Macroeconomics	(*19.9/20*)	Advanced Programming	(*19.3/20*)	Artificial Intelligence	(*19.9/20*)
Game Theory (Graduate)	(*20.0/20*)	Probability & Statistics	(*20.0/20*)	Machine Learning (Graduate)	(*16.5/20*)

Skills

Programming Language: Python (*advanced*), R (*advanced*), Java (*advanced*), C / C++ (*modest*), SQL (*modest*), Julia (*basic*), MatLab & Octave (*basic*), Stata (*basic*), HTML/JS (*basic*)

Tools and Software: MS Excel (*advanced*), LaTeX (*advanced*), Jupyter NB / G Colab (*advanced*), Git / GitHub (*modest*), Dynare (*modest*), ArcGIS (*modest*), Gephi (*modest*), Vensim (*modest*), Twitter & Telegram API (*modest*), CrowdTangle (*basic*)

Language: Farsi/Persian (*native*), English (*fluent - IELTS: 8.0*)

Teaching Experience

Teaching Assistant Sharif University of Technology — Sep 2019 - Jul 2022

- *Probability & Statistics*: Fall 2020, Spring 2021
- *Data Structure & Algorithm*: Spring 2021
- *Introduction to Macroeconomics*: Spring 2021
- *Game Theory*: Fall 2021, Spring 2021

Work Experience

Junior Data Scientist | *Metodata* — Jan 2022 - Sep 2022

Collaborated under the supervision of Dr. *Meysam Alizadeh* and Dr. *Zeynab Samei*.

- Household financial transaction pattern analysis and anomaly detection

  Collaborated on a project with the ***Central Bank of Iran*** and the ***Ministry of Labour and Social Welfare*** by analyzing 100 million transactions from a 100,000-sample of Iranian households and engineering a model achieving 84% accuracy in detecting irregular consumption transaction patterns.

- Public opinion and brand awareness analysis using social media platforms

  Conducted data collection on prominent Iranian social media platforms (Twitter, Instagram, Telegram, Facebook, etc.) based on client-specified keywords and utilized NLP algorithms to gauge public reactions and satisfaction, in addition to graph analysis to pinpoint influential users and identify communication clusters on the information propagation network.

Data Engineer Intern | *Institute for Research in Fundamental Sciences (IPM)* — Jun 2020 - Sep 2020

Contributed to the R&D team of Iran's National Observatory (INO) project.

- Weather station data pipe-line and data analysis
  . Established a data-cleaning pipeline for the weather report system, handling sensor data reception, filtering, storage, and real-time visualization of station status.
  . Developed a model to detect clouds in night sky images captured by the all-sky camera deployed at the station.

References

Dr. Zafer Kanık — webpage
zafer.kanik@glasgow.ac.uk
Assistant Professor in Economics at Adam Smith Business School

Dr. Santiago Montoya-Blandón — webpage
santiago.montoya-blandon@glasgow.ac.uk
Assistant Professor in Econometrics at Adam Smith Business School

Dr. Naser Amanzadeh — webpage
amanzadeh@berkeley.edu
Assistant Professor in Economics at Sharif University of Technology